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Field Crops
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Sorghum, Sudangrass, and Sorghum-Sudangrass Hybrids for Forage

Sorghum, sudangrass and their hybrids produce nutritious forage for green chop, silage, hay and pasture in late summer. These summer annual forages are a good complement to many of the perennial cool season forages that are in a semi-dormant phase during the hot summer months.

Sorghum and sudangrass are well adapted to areas of low rainfall and conditions that are not suitable for growing corn, but they also perform well under irrigation. The following descriptions may help to decide which group of grasses best meets your needs.

Sudangrass has fine stems and tillers extensively. Regrowth is rapid making it best suited to hay and pasture production.

Sorghum usually grows tall and matures late in the growing season. It is used for silage and has a feeding value equal to 80-90 per cent of corn silage.

Sorghum should not be grazed by livestock because it contains higher levels of prussic acid (HCN) than sudangrass or the sorghum-sudangrass hybrids.

Sorghum-sudangrass hybrids are high yielding with the stem providing more than 50 per cent of the yield. There are wide variations in the yield, growth habit and prussic acid content of the hybrids. They are best suited for use as green chop, hay or silage.

Establishment

A warm, moist and firm seedbed is required to establish these grasses. They compete poorly with weeds during establishment and do not grow well in low areas or sloughs. They will not tolerate cool or overly saline soils.

Seeding rates will vary depending on the row spacing, soil texture, and grass type.

Tables 1 and 2 provide answers to the most commonly asked questions concerning the management and agronomy of these grasses.

Silage yields of sorghum, sudangrass, and sorghum-sudangrass will vary according to the type grown. The Alberta Special Crops and Horticulture Research Center in Brooks and at Bow Island has tested these grasses for several years and the average yields of registered varieties are presented in Table 3. Corn yields are provided for comparison.

Special management problems

Nitrate poisoning

Nitrates can accumulate in the stalks of drought stressed plants. Ensiling can reduce nitrates by 25-50 per cent, however several weeks should be allowed before the silage is fed to ensure that proper fermentation has taken place. In plants used for hay, the nitrate content will not decrease during curing. Adjust the feed rations so the hay does not cause problems for livestock. If a nitrate problem is suspected have the forage tested before feeding it to livestock.

Prussic acid

The prussic acid (HCN) content may increase in plants when the crop has undergone stress from drought or frost, or if the soil nitrogen is high and there is a deficiency of phosphorus and potassium. If large amounts of the affected crop are eaten by livestock, the accumulated prussic acid causes asphyxiation. Do not allow livestock

Table 1. Seeding rate guidelines

Row spacing	Type	Dryland	Irrigation
6-7 in.(15-18 cm)	sudangrass, sorghum-sudangrass, hybrids	15-25 lb/ac (17-28 kg/ha)	30 lb/ac (33 kg/ha)
30 in. (75 cm)	sudangrass, sorghum-sudangrass, hybrids	5-8 lb/ac (6-9 kg/ha)	10-12 lb/ac (11-13 kg/ha)
26-42 in. (90-110 cm)	sudangrass, sorghum-sudangrass, hybrids	5-8 lb/ac (6-9 kg/ha)	8-10 lb/ac (9-11 kg/ha)

Source: Silage Manual, Alberta Agriculture. Agdex 120/52-2, 1988.

Copies of this and related publications may be obtained from the Print Media Branch, Alberta Agriculture, 7000 - 113 Street, Edmonton, Alberta T6H 5T6 or Alberta Agriculture's District Offices.

Table 2. Agronomic information on some warm season grasses

	Corn	Sorghum	Sudangrass sorghum-sudangrass
Drought tolerance	Good	Very good	Very good
Soil	Well drained	Well drained	Well drained
Seeding date	Soil temp 50°F (10°C)	Soil temp 65°F (18°C)	Soil temp 65°F (18°C)
Seeding depth	2 in. (5 cm)	1-1 1/2 in. (2.5 - 4 cm)	1-2 in. (2.5 - 5 cm)
Annual nitrogen lb/ac (kg/ha)	100-200	40-60	50-100
Soil P lb/ac (kg/ha)	40-50	40-50	40-50
Soil K lb/ac (kg/ha)	260-300	260-300	260-300
Mowed maturity	1/2-3/4 milk	Soft-mid-dough	2-2 1/2 ft or boot
Nutrition			
– Crude protein (%)	6-10	9-14	9-12
– Acid detergent fibre (%)	24-33	30-38	26-35
– Neutral detergent fibre (%)	43-52	40-50	45-50
Uses	Silage	Green chop, silage	Silage, hay, green chop, pasture

Source: Pioneer Forage Manual – A Nutritional Guide - 1990

Table 3.Yield (tons/ac) of warm-season grasses in southern Alberta (3-year average)

		Bow Island		Brooks			
Variety	Type	Irrigated	% of 3957	Irrgated	% of 3957	Dryland	% of 3957
Funk 83F	sorghum-sudangrass	5.82	122	6.59	95	4.48	136
Graze-all	sorghum-sudangrass	5.07	106	6.30	91	4.03	122
Piper	sudangrass	3.36	70	4.39	63	3.03	92
3957	corn	4.77	100	6.92	100	3.30	100
877F	sorghum-sudangrass	5.02	105	6.65	96	3.81	115
931	hybrid sorghum	6.22	131	7.91	114	4.81	146
988	sorghum-sudangrass	5.14	108	6.76	98	4.15	126

to graze succulent young plants that are less than 2 ft (0.6 m) high. Give animals a full feed of hay before pasturing them and provide clean, fresh water.

Green chop may also be a potential prussic acid problem. Silage can be more safely fed after storage of one to two months as the HCN gas will have escaped. Test the forage for the presence of prussic acid if a problem is suspected.

These grasses are a useful source of high yielding quality forage and can be fed safely to livestock as long as a producer is aware of stress conditions as they develop and responds accordingly to correct them.

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